$$\int_0^1 x^2\,dx \quad + \quad \int_1^2 (2-x)\,dx$$

$$\left.\frac{x^3}{3}\right]_0^1 = \frac{1}{3}$$

$$\left.2x-\frac{x^2}{2}\right]_1^2 = (4-2) - \left(2-\frac{1}{2}\right)$$

$$2-1\frac{1}{2}=\frac{1}{2}$$

$$\frac{1}{3}+\frac{1}{2}=\frac{2}{6}+\frac{3}{6}=\frac{5}{6}$$

$$\int_0^1 \sqrt{x}\,dx + \int_1^2 x^2\,dx$$

$$\frac{x^{\frac{3}{2}}}{\frac{3}{2}} = \frac{2}{3}x^{3/2}\Big]_0^1 = \frac{2}{3}$$

$$\int_1^2 x^2\,dx = \frac{x^3}{3}\Big]_1^2 = \frac{8}{3} - \frac{1}{3} = \frac{7}{3}$$

$$A = \frac{2}{3} + \frac{7}{3} = 3$$

$y = \sin x$
$y' = \cos x$

$y' = \sin x$

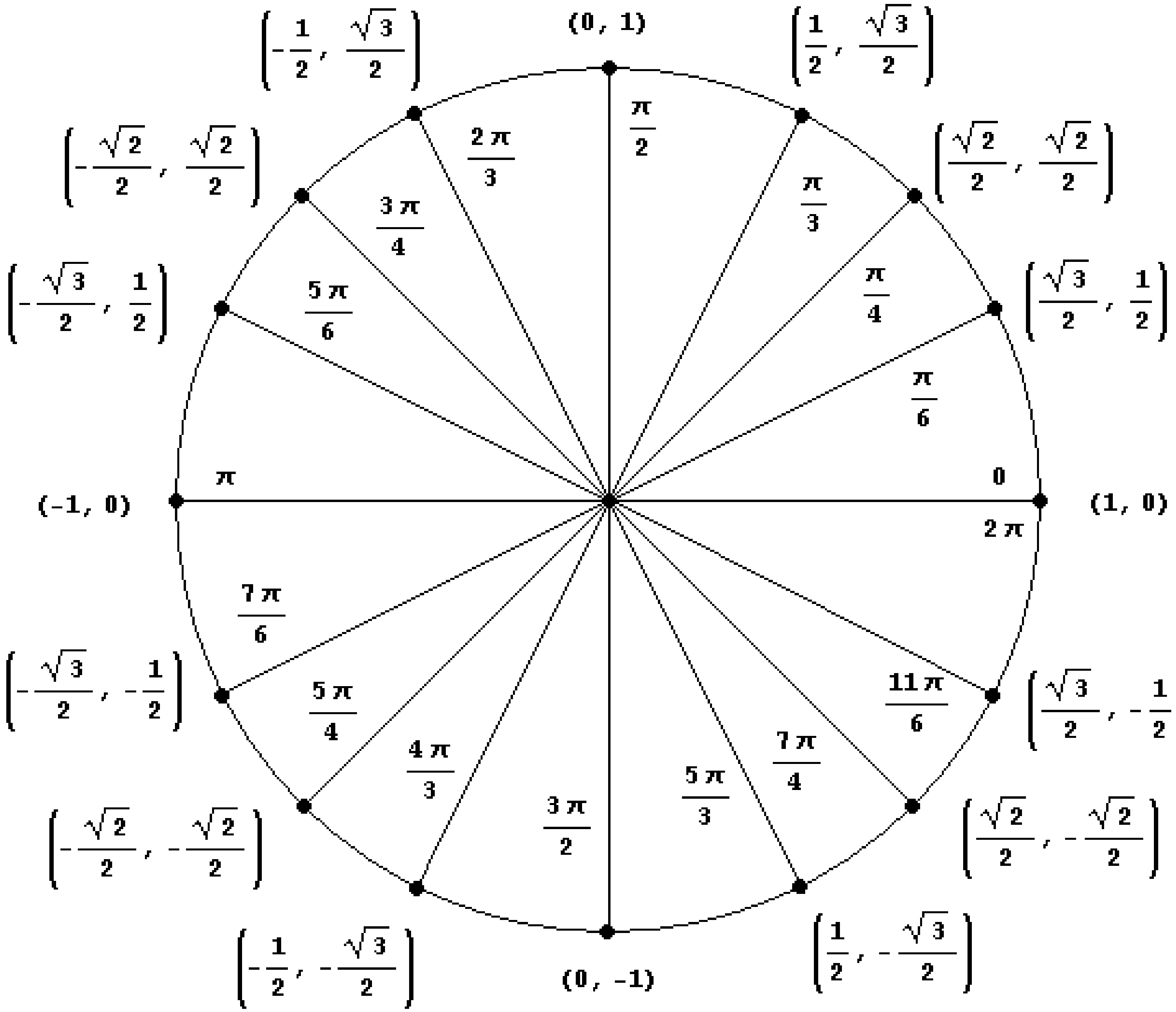
$$\text{Rect.} - \int$$

$$2\pi - \int_0^{\pi} (1 + \cos x)\,dx$$

$$2\pi - (x + \sin x)\Big]_0^{\pi} = (\pi + \sin \pi) - (\pi + 0) = \pi$$

$$A = 2\pi - \pi = \pi$$

2r.



$\sin\frac{\pi}{6} = \frac{1}{2}$

$\sin\frac{5\pi}{6} = \frac{1}{2}$

$\cos\frac{\pi}{6} = \frac{\sqrt{3}}{2}$

$\cos\frac{5\pi}{6} = -\frac{\sqrt{3}}{2}$

$\sin\frac{\pi}{6} = \frac{1}{2}$

$\sin\frac{5\pi}{6} = \frac{1}{2}$

$\cos\frac{\pi}{6} = \frac{\sqrt{3}}{2}$

$\cos\frac{5\pi}{6} = -\frac{\sqrt{3}}{2}$

$$\int_{\pi/6}^{5\pi/6} \sin x \, dx =$$

$$-\cos x \Big]_{\pi/6}^{5\pi/6} = \left(-\cos\frac{5\pi}{6}\right) - \left(-\cos\frac{\pi}{6}\right)$$

$$\frac{\sqrt{3}}{2} + \frac{\sqrt{3}}{2} = \frac{\cancel{2}\sqrt{3}}{\cancel{2}}$$

$$= \sqrt{3}$$

$\sqrt{3}$ − Rect.

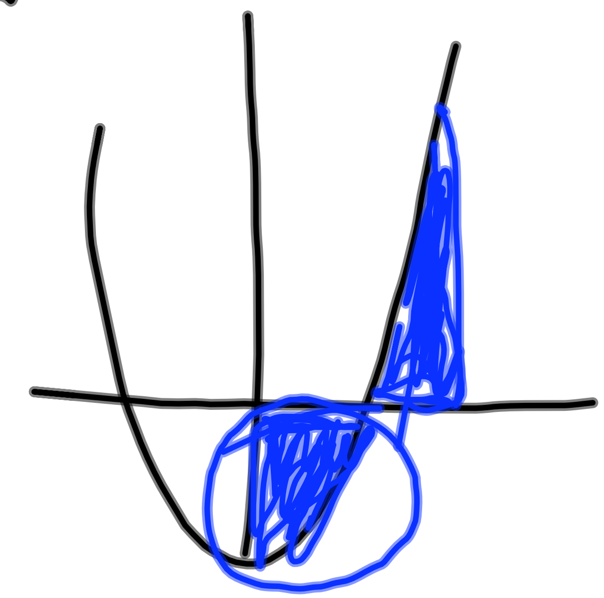
$$\sqrt{3} - \left(\frac{1}{2} \cdot \left[\frac{5\pi}{6} - \frac{\pi}{6}\right]\right) = \sqrt{3} - \left(\frac{1}{\cancel{2}} \cdot \frac{\cancel{2}\pi}{3}\right)$$

$$A = \sqrt{3} - \frac{\pi}{3}$$

$y = 2x^2 + 5 \quad [0, 3]$

$$\int_0^3 (2x^2 + 5)\,dx$$

$$\left.\frac{2}{3}x^3 + 5x\right]_0^3 = \frac{2}{3} \cdot 27 + 15$$



$18 + 15 = 33$

$$\int_0^1 x^{-\frac{2}{3}}\,dx$$

$$\frac{x^{\frac{1}{3}}}{\frac{1}{3}} = 3x^{\frac{1}{3}}\Big]_0^1 = 3$$

$$\int_1^4 \left(x^3 + \sqrt{x}\right) dx$$

$$4^{3/2} = (\sqrt{4})^3 = 8$$

$$\left.\frac{x^4}{4} + \frac{2}{3}x^{3/2}\right]_1^4 = 64 + \frac{2}{3}\cdot 4^{3/2}$$

$$= \left(64 + \frac{16}{3}\right) - \left(\frac{1}{4} + \frac{2}{3}\right)$$

$$64 - \frac{1}{4} + \frac{14\cdot 4}{3\cdot 4}$$

$$64 - \frac{3}{12} + \frac{56}{12}$$

$$64 + \frac{53}{12} = \frac{821}{12}$$

$$\begin{array}{r} 64 \\ \times\, 12 \\ \hline 128 \\ 64 \\ \hline 768 \\ +\,53 \\ \hline 821 \end{array}$$

$$\int_0^1 \frac{1+\sqrt{x}}{\sqrt{x}}\,dx$$ → split into 2 or more frac.

$$\int_0^1 \left(\frac{1}{\sqrt{x}}+\frac{\sqrt{x}}{\sqrt{x}}\right)dx = \int_0^1 \left(x^{-\frac{1}{2}}+1\right)dx$$

$$\left.2x^{\frac{1}{2}}+x\right]_0^1$$

$$2+1=3$$

HW

p. 286

3, 4, 5, 6, 7, 8, 13, 14

Area

15-18